

CLAIMS

What is claimed is:

1. - 5. (cancelled)

5

*Cl
Cond*
2. (currently amended) ~~The waterproof digital electronic camera system according to claim 5 wherein the converter comprises:~~ A waterproof digital electronic camera system comprising:

10 a digital electronic camera having an RS-232 digital electrical signal interface for downloading image information from the camera;

a converter converting signals upon the digital electrical signal interface to serial signals radiating in space;

15 an enclosure hermetically sealing water and air tight both the digital electronic camera and the converter, the enclosure being transparent in at least an area of (i) an optical lens of the digital electronic camera so that pictures may be taken through the enclosure, and (ii) a radiation signal output of the converter so that radiation signals containing image information are
20 communicable exterior to the camera;

said converter comprising:

an RS-232 to TTL signal converter converting RS-232 serial digital electrical signals to Transistor-Transistor Logic (TTL) serial digital electrical signals;

25 an encoder-decoder converting the TTL electrical signals to electrical signals that are suitably encoded so as to be converted to optical signals for further transmission; and

an electrical-to-optical signal converter converting the encoded electrical signals to optical signals, and transmitting the
30 optical signals through the at least one transparent area of the enclosure.

[7. (cancelled)

2
3
8. (currently amended) ~~The waterproof digital electronic camera system according to claim 7 wherein the trigger circuit comprises:~~

A waterproof digital electronic camera system comprising:

5 a digital electronic camera having a digital electrical signal interface for downloading image information from the camera; said camera having a shutter circuit for activating the shutter, to which shutter circuit electrical connection may suitably be made;
C (curd)
a converter converting signals from the digital electrical signal interface to radiation signals;

10 an enclosure hermetically sealing water and air tight both the digital electronic camera and the converter, the enclosure being transparent in at least an area of (i) an optical lens of the digital electronic camera so that pictures may be taken through the enclosure, and (ii) a radiation signal output of the converter
15 so that radiation signals containing image information are communicable exterior to the camera;

a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the enclosure to produce an
20 electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera;

said trigger circuit comprising: a Hall-effect sensor responsive to a magnetic field to produce a signal output; and
25 an amplifier amplifying the signal output of the Hall-effect sensor for application to the shutter circuit as the electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera.

3
3
8. (currently amended) ~~The waterproof digital electronic camera system according to claim 7 wherein the trigger circuit comprises:~~

30 A waterproof digital electronic camera system comprising:

a digital electronic camera having a digital electrical signal interface for downloading image information from the camera; said

camera having a shutter circuit for activating the shutter, to which shutter circuit electrical connection may suitably be made; a converter converting signals from the digital electrical signal interface to radiation signals;

5 an enclosure hermetically sealing water and air tight both the digital electronic camera and the converter, the enclosure being transparent in at least an area of (i) an optical lens of the digital electronic camera so that pictures may be taken through the enclosure, and (ii) a radiation signal output of the converter
10 so that radiation signals containing image information are communicable exterior to the camera;

a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the enclosure to produce an
15 electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera; and
said trigger circuit comprising:

a reed switch responsive to a magnetic field to gate an electrical signal responsively to which the shutter circuit will activate the
20 shutter of the digital electronic camera.

10 (currently amended) The ~~waterproof digital electronic camera system according to claim 1 wherein the digital electronic camera further comprises: A waterproof digital electronic camera system~~
25 comprising:

a digital electronic camera having a digital electrical signal interface for downloading image information from the camera;
a converter converting signals from the digital electrical signal interface to radiation signals;

30 an enclosure hermetically sealing water and air tight both the digital electronic camera and the converter, the enclosure being transparent in at least an area of (i) an optical lens of the digital electronic camera so that pictures may be taken through the enclosure, and (ii) a radiation signal output of the converter

so that radiation signals containing image information are communicable exterior to the camera;

a rechargeable power source for providing power to at least the digital electronic camera and the converter; and

5 ~~and wherein the waterproof digital electronic camera system further comprises:~~

U
und
a charging circuit, also within the enclosure, for converting some stimuli external to the enclosure to power suitable to recharge the rechargeable power source.

10 5
12. (original) The waterproof digital electronic camera system according to claim 10 wherein the rechargeable power source comprises: a battery.

15 6
13. (currently amended) The waterproof digital electronic camera system according to claim 9 wherein the battery is located within a cavity sealed to the exterior of the camera by a frangible membrane;
wherein the membrane may be broken, the battery replaced, and the
20 cavity resealed.

7
18. (original) The waterproof digital electronic camera system according to claim 10 wherein the charging circuit comprises:
an inductive coil in which alternating current is induced by an
25 oscillatory magnetic field external to the enclosure;
a bridge rectifier rectifying the alternating current of the inductive coil to produce a direct current; and
a regulating and charging circuit conditioning the direct current into power to charge the rechargeable power source.

30 14.- 25. (cancelled)

8
19. (currently amended) ~~The method according to claim 21 wherein the converting comprises:~~

A method of communicating with a sealed digital electronic camera comprising:

hermetically housing a digital electronic camera having an RS232 serial digital electrical signal interface for downloading image information from the camera in a housing that is optically transparent in at least an area of a lens of the digital electronic camera so that pictures may be taken through the housing;

converting signals upon the RS232 serial digital electrical signal interface of the digital electronic camera to radiation signals by the steps of:

first-converting RS-232 serial digital electrical signals to Transistor-Transistor Logic (TTL) serial digital electrical signals in a RS-232 to TTL signal converter;

second-converting the TTL electrical signals to electrical signals that are suitably encoded so as to be converted to optical signals for further transmission in an encoder-decoder; and

third-converting the encoded electrical signals to optical signals, and transmitting the optical signals through the enclosure, in an electrical-to-optical signal converter; and

radiatively communicating the radiation signals through the housing.

27. (cancelled)

g (currently amended) A method of communicating with a sealed digital electronic camera comprising:

hermetically housing a digital electronic camera having a digital electrical signal interface for downloading image information from the camera in a housing that is optically transparent in at least an area of a lens of the digital electronic camera so that pictures may be taken through the housing;

converting signals upon the digital electrical signal interface of the digital electronic camera to radiation signals;

radiatively communicating the radiation signals through the housing;

activating a shutter in and by a shutter circuit to which electrical connection may suitably be made; and

5 triggering the shutter circuit in and by a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the housing; The method according to claim 27 further wherein the triggering of the shutter circuit is in and by a Hall-effect trigger circuit.

10 ¹⁰
~~20~~ (currently amended) A method of communicating with a sealed digital electronic camera comprising:

15 hermetically housing a digital electronic camera having a digital electrical signal interface for downloading image information from the camera in a housing that is optically transparent in at least an area of a lens of the digital electronic camera so that pictures may be taken through the housing;

20 converting signals upon the digital electrical signal interface of the digital electronic camera to radiation signals;

radiatively communicating the radiation signals through the housing;

activating a shutter in and by a shutter circuit to which electrical connection may suitably be made; and

25 triggering the shutter circuit in and by a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the housing; The method according to claim 27 further wherein the triggering of the shutter circuit is in and by a reed switch trigger circuit.

30

¹¹
~~20~~ (currently amended) ~~The method according to claim 21 further comprising:~~ A method of communicating with a sealed digital electronic camera comprising:

hermetically housing a digital electronic camera having a digital electrical signal interface for downloading image information from the camera in a housing that is optically transparent in at least an area of a lens of the digital electronic camera so that pictures may be taken through the housing;

converting signals upon the digital electrical signal interface of the digital electronic camera to radiation signals;

radiatively communicating the radiation signals through the housing;

providing power to at least the digital electronic camera with a rechargeable power source; and

converting some stimulus external to the enclosure into power to recharge the rechargeable power source.

12
11. (Original) The method according to claim 11 wherein the converting comprises:

inducing an alternating current in an inductive coil inside the housing;

rectifying in a bridge rectifier the alternating current of the

inducing to produce a direct current; and

regulating and conditioning the direct current into power to charge the rechargeable power source.

32-38. (cancelled)

13
14 (currently amended) ~~The digital electronic camera according to claim 34~~ A digital electronic camera CHARACTERIZED IN THAT:

the optics and electronics of the camera are permanently within a solid mass of optically clear dielectric material;

the camera is potted inside and out in a solid block of said optically clear dielectric material;

the camera contains essentially no gases whatsoever; and

communication of image data from the camera to the exterior of the solid mass is via an optical link;

wherein the camera may suitably be immersed to a depth of at least a mile within the ocean without crushing.

14
15
5 ~~10.~~ (currently amended) ~~The digital electronic camera according to claim 34 FURTHER CHARACTERIZED IN THAT A digital electronic camera~~
CHARACTERIZED IN THAT:

the optics and electronics of the camera are permanently within a solid mass of optically clear dielectric material;

Y cond 10 the camera is potted inside and out in a solid block of said optically clear dielectric material;

the camera contains essentially no gases whatsoever; and communication of an actuation signal to a shutter of the camera is via a magnetic link-;

15 wherein the camera may suitably be immersed to a depth of at least a mile within the ocean without crushing.

15
16
20 ~~10.~~ (currently amended) ~~The digital electronic camera according to claim 34 FURTHER CHARACTERIZED IN THAT A digital electronic camera~~
CHARACTERIZED IN THAT:

20 the optics and electronics of the camera are permanently within a solid mass of optically clear dielectric material;

the camera is potted inside and out in a solid block of said optically clear dielectric material;

the camera contains essentially no gases whatsoever; and

25 communication of power to the camera is via inductive coupling-;
wherein the camera may suitably be immersed to a depth of at least a mile within the ocean without crushing.

16
30 ~~10.~~ (previously presented) A waterproof digital electronic camera system comprising:

a digital electronic camera having a digital electrical signal interface for downloading image information from the camera;

a converter converting signals from the digital electrical signal interface to radiation signals; wherein the converter is

converting signals from the digital electrical signal interface to serial signals radiating in space;

a shutter circuit for activating the shutter, to which shutter circuit electrical connection may suitably be made;

5 a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the enclosure to produce an electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera;

10 a rechargeable power source for providing power to at least the digital electronic camera and the converter;

a charging circuit, also within the enclosure, for converting some stimuli external to the enclosure to recharge the rechargeable power source; and

15 an enclosure hermetically sealing water and air tight both the digital electronic camera and the converter, the enclosure being transparent in at least an area of (i) an optical lens of the digital electronic camera so that pictures may be taken through the enclosure, and (ii) a radiation signal output of the converter
20 so that radiation signals containing image information are communicable exterior to the enclosure.

¹⁷
~~42~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~ ¹⁶

25 wherein the digital electronic camera has an RS-232 serial digital electrical signal interface; and

wherein the converter is converting signals from the RS-232 serial digital electrical signal interface to serial signals radiating in space.

30 ¹⁸
~~42~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~ ¹⁷ wherein the converter comprises:

an RS-232 to TTL signal converter converting RS-232 serial digital electrical signals to Transistor-Transistor Logic (TTL) serial digital electrical signals;

an encoder-decoder converting the TTL electrical signals to electrical signals that are suitably encoded so as to be converted to optical signals for further transmission; and

an electrical-to-optical signal converter converting the encoded electrical signals to optical signals, and transmitting the optical signals through the at least one transparent area of the enclosure.

¹⁹
~~45~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~¹⁶ wherein the trigger circuit comprises:

a Hall-effect sensor responsive to a magnetic field to produce a signal output; and

an amplifier amplifying the signal output of the Hall-effect sensor for application to the shutter circuit as the electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera.

²⁰
~~46~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~¹⁶ wherein the trigger circuit comprises:

a reed switch responsive to a magnetic field to gate an electrical signal responsively to which the shutter circuit will activate the shutter of the digital electronic camera.

²¹
~~47~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~¹⁶ wherein the rechargeable power source comprises: a battery.

²²
~~48~~ (previously presented) The waterproof digital electronic camera system according to claim ~~42~~¹⁶

wherein the battery is located within a cavity sealed to the exterior of the camera by a frangible membrane; wherein the membrane may be broken, the battery replaced, and the cavity resealed.

5

C1 (und)
²³
~~48~~ (previously presented) The waterproof digital electronic camera system according to claim ¹⁶~~48~~ wherein the charging circuit comprises:

10

an inductive coil in which alternating current is induced by an oscillatory magnetic field external to the enclosure;
a bridge rectifier rectifying the alternating current of the inductive coil to produce a direct current; and
a regulating and charging circuit conditioning the direct current into power to charge the rechargeable power source.

15

²⁴
~~50~~ (previously presented) A method of communicating with a sealed digital electronic camera comprising:

20

hermetically housing a digital electronic camera having a digital electrical signal interface for downloading image information from the camera in a housing that is optically transparent in at least an area of a lens of the digital electronic camera so that pictures may be taken through the housing:

25

converting signals from the digital electrical signal interface of the digital electronic camera to radiation signals; and

radiatively communicating the radiation signals through the housing:

first-converting RS-232 serial digital electrical signals to Transistor-Transistor Logic (TTL) serial digital electrical signals in a RS-232 to TTL signal converter;

30

second-converting the TTL electrical signals to electrical signals that are suitably encoded so as to be converted to optical signals for further transmission in an encoder-decoder;

third-converting the encoded electrical signals to optical signals, and transmitting the optical signals through the enclosure, in an electrical-to-optical signal converter.

activating a shutter in and by a shutter circuit to which
5 electrical connection may suitably be made;

triggering the shutter circuit in and by a trigger circuit, also within the enclosure and electrically connected to the shutter circuit of the digital electronic camera, responsive to a stimulus external to the housing

10 providing power to at least the digital electronic camera with a rechargeable power source;

converting some stimulus external to the enclosure into power to recharge the rechargeable power source.

15 ²⁵~~22~~. (previously presented) The method according to claim ²⁴~~50~~ wherein the converting comprises:

inducing an alternating current in an inductive coil inside the housing;

rectifying in a bridge rectifier the alternating current of the

20 inducing to produce a direct current; and

regulating and conditioning the direct current into power to charge the rechargeable power source.

25 ²⁶~~23~~. (previously presented) The method according to claim ²⁴~~50~~ further wherein the triggering of the shutter circuit is in and by a Hall-effect trigger circuit.

30 ²⁷~~24~~. (previously presented) The method according to claim ²⁴~~50~~ further wherein the triggering of the shutter circuit is in and by a reed switch trigger circuit.

²⁸~~25~~. (previously presented) A digital electronic camera CHARACTERIZED IN THAT the optics and electronics of the camera are

permanently within a solid mass of optically clear dielectric material, and the camera contains essentially no gases whatsoever; wherein the camera may suitably be immersed to a depth of at least a mile within the ocean without crushing;

5 wherein the camera is potted inside and out in a solid block of said optically clear dielectric material;

wherein the camera is within an optically clear liquid dielectric material;

10 wherein the camera and its liquid are held within a liquid-tight exterior case that is itself optically clear in at least a region where an image is received through the case and into a lens of the camera;

wherein image data is communicated from the camera to the exterior of the solid mass;

15 wherein an actuation signal is communicated to a shutter of the camera from the exterior of the solid mass;

wherein the power source for the camera is rechargeable; and

wherein power is communicated to the power source from the exterior of the solid mass.

20 ²⁹
~~55~~ (previously presented) The digital electronic camera according to claim ~~54~~ ²⁸ FURTHER CHARACTERIZED IN THAT said optically clear liquid dielectric material is ethanol.

25 ³⁰
~~56~~ (previously presented) The digital electronic camera according to claim ~~54~~ ²⁸ FURTHER CHARACTERIZED IN THAT communication of the image data is via an optical link.

30 ³¹
~~57~~ (currently amended) The digital electronic camera according to claim 34 ~~54~~ ²⁸ FURTHER CHARACTERIZED IN THAT communication of the actuation signal is via a magnetic link.

4 (cont)

32

Enclosed are: a Patent Application Fee Determination Record, a marked up, substitute specification and a clean, substitute specification. In the marked up specification, additions are shown underlined and deletions are shown in strike out.

C

REMARKS**Specification**

7. The Examiner stated: "The substitute specification filed 18 August 2003, in conjunction with Amendment A (Paper 7, 18 August 2003), has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because it is not accompanied by a statement that the substitute specification includes no new matter and a marked up version of the substitute specification showing all the changes (including the matter being added to and the matter being deleted from) to the specification of record. Also, numbering the paragraphs of the specification of record is not considered a change that must be shown pursuant to this paragraph."

Applicant thanks the Examiner for clarifying the requirements for substitute specifications during telephone conversations during the week of May 17. In accordance with these discussions two substitute specifications are enclosed. One substitute specification is marked up: meaning that additions are shown underlined and deletions are shown in strike out. The other is clean: meaning that all amendments are incorporated. Pagination will differ from the originally submitted application because of changes in software and hardware, added text, and deleted text. However, the enclosed, substitute specifications include no new matter. Applicant apologizes for not making this statement previously.

8. The Examiner stated: "Amendment A was found non-compliant (Paper No. 9, 7 October 2003) and, hence, was not entered. Therefore, all amendments to the specification made in Amendment A were also not entered and, hence, the objections to the specification made in the Non-Final Office Action still stand. For the Applicant's convenience, a listing and explanation of all the objections to the specification, including the objections made in the Non-Final Office Action and new objections in this Office Action, can be found below."

Objections To the Specification

9. The Examiner stated: “A substitute specification excluding the claims is required pursuant to 37 CFR 1.125(a) because the legibility of the application papers renders it difficult to consider the application and to arrange the papers for printing or copying.

A substitute specification filed under 37 CFR 1.125(a) must only contain subject matter from the original specification and any previously entered amendment under 37 CFR 1.121. If the substitute specification contains additional subject matter not of record, the substitute specification must be filed under 37 CFR 1.125(b) and (c). The Applicant is reminded to include a statement that no new matter has been added.”

Substitute specifications are enclosed as described above. Applicant re-iterates that the substitute specifications contain no new matter.

10. The Examiner stated: “The disclosure is objected to because it contains embedded hyperlinks (Pages 3 and 9). Applicant is required to delete the embedded hyperlinks. See MPEP §608.01.”

The Applicant has removed the hyperlink, which will satisfy this objection.

11. The Examiner stated: “The disclosure is objected to because of the following informalities: inconsistency with the drawings. On page 23, lines 22 of the original specification, the battery charging circuit is labeled with reference sign 1835, however, it is shown in figure 5 as reference sign 1833. Also on page 23, line 23 of the original specification, the battery is labeled with reference sign 181, however, it shown in figures 1 and 5 as reference sign 184. Appropriate correction is required.”

Applicant has amended reference sign “1835” to “1833” and reference sign “181” to “184” in this paragraph in order to conform the text to the drawings. This amendment should satisfy this objection.

C

Drawings

12. The Examiner stated: "The drawings are objected to because of an inconsistency regarding reference sign 1833 in figure 5. Page 23, line 22 of the original specification lists the battery charging circuit as reference sign 1835. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance."

The text has been amended as explained above. The drawings are not inconsistent. Thus no drawing corrections are necessary.

Claim Objections

13. The Examiner stated: "Claim 26 is objected to because of an antecedent basis problem. Claim 26 recites therein "first-converting RS-232" and "second-converting RS-232", however "RS-232" had not been introduced in base Claim 21 or previously in Claim 26. To overcome the objection, Claim 21 and/or 26 needs to introduce the concept of "RS-232" in a fashion similar to Claims 24 and 25.

Claim 26 has been amended to introduce the concept of "RS-232" as suggested by the Examiner thus satisfying this objection.

14. The Examiner stated: "Claims 57 and 58 are objected to because their subject matter duplicates that of Claims 40 and 41, respectively and individually. Claims 57 and 58 are believed to dependent upon Claim 54; however, they currently depend from Claim 34. Appropriate correction of both objections is required."

Claims 57 and 58 have been amended to correct the dependency from Claim 34 to Claim 54 as suggested by the Examiner, thus satisfying this objection.

C

Claim Rejections - 35 USC 103

16. The Examiner stated: "Claims 1 - 5, 7, 21 - 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al. in view of Ford et al."

Applicant has cancelled claims Claims 1 - 5, 7, 21 - 25, and 27 thus satisfying this rejection.

23. The Examiner stated: "Claims 14 - 20 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al. in view of Ford et al. in further view of Fraker et al."

Applicant has cancelled claims Claims 14 - 20 and 32 thus satisfying this rejection.

29. The Examiner stated: "Claims 33 - 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fraker et al. in view of Wood."

Applicant has cancelled claims Claims 33 - 38 thus satisfying this rejection.

Allowable Subject Matter

13. The Examiner stated: "Claims 6, 8 -13, 26, 28 - 31, and 39 - 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims."

Applicant has rewritten Claims 6, 8 -13, 26, 28 - 31, and 39 - 41 in independent form including all the limitations of the base claim and any intervening claims, thus satisfying this rejection.

36. The Examiner stated: "Claims 42 - 56 are allowed."

An additional fee of \$344 is due on account of the above amendments. See attached Patent Application Fee Determination Record. A credit card authorization for this amount is attached.

Reconsideration of this application and its early allowance are respectfully requested in view of the above presented amendments and remarks.

C

Amendment

Serial No. 09/333,825

Page 7 of 7

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Norton R. Townsley", followed by a large checkmark.

Norton R. Townsley
Applicant's Attorney
Registration No. 33,608

BELASCO JACOBS & TOWNSLEY, LLP
6100 Center Drive
Suite 630
Los Angeles, CA 90045
Phone: (310) 743-1188
Fax: (310) 743-1189